

THE 35 U.S.C. § 102 REJECTION

Claims 1-3, 5 and 6 are again being rejected under 35 U.S.C. § 102 as being anticipated by **Kloeppel** ('703). This rejection is again traversed as being legally improper and factually unsupported.

In the alleged reconsideration, the Examiner remarks that **Kloeppel** "shoos [*sic: shows*] clearly a hollow cylindrical sleeve (54) being fitted on a shaft, (50), a thrust plate (52), attached to the shaft and sleeve which thrust plate being faced at one end of the shaft and the sleeve perpendicular to an axis of the bearing (Fig. 2), the hydrodynamic pressure in a radial direction is generated at a radial bearing portion formed by an outer circumferential surface on the shaft and surface of the sleeve (Fig. 2) and hydrodynamic pressure in a thrust direction is generated at a thrust bearing, further the radial bearing portion is provided with a groove (column 5 line 21) witch [*sic: which*] generate a force in a thrust direction, an upstream side of the radial bearing portion is shielded against outside atmosphere (94 Fig. 3) and a result negative pressure developed in the vicinity of the upstream of the radial bearing (21, column 4, line 35)."

The invention of claims 1-3, 5 and 6 relates to a hydrodynamic bearing having a radial bearing portion and a thrust bearing portion with each including two members that face one another. One of the members forming the radial bearing portion has a surface with a groove or grooves that generate a force in a thrust direction. This force brings the two members of thrust bearing portion closer to each other. Also, one of the surfaces of the members forming the thrust bearing portion has a groove or grooves that generate hydrodynamic pressure in the thrust direction. The force generated in the thrust direction by the bearing portion reduces the gap between the two members forming the thrust bearing portion, and this force is balanced by the hydrodynamic pressure generated in the thrust bearing portion. This balancing condition creates enhanced thrust rigidity, which in turn reduces variation in thrust position (page 7, lines 1-12 of

Applicants' disclosure). To generate the thrust force for making the gap between the two members in the thrust bearing portion narrower, the grooves formed in the radial bearing portion are inclined. The inclination of the grooves with respect to the axis of the bearing is in a direction in which the force may be generated by means of a screw effect when a rotational member is rotated (page 11, line 8 through page 12, line 2).

Applicants submit that the Examiner has failed to establish a *prima facie* case of anticipation under 35 U.S.C. § 102. **Kloeppel** discloses a hydrodynamic bearing wherein a shaft is rotated for the purpose of reducing weight of rotating elements and minimizing power consumption (column 3, lines 39-43). In such a hydrodynamic bearing, the shaft 80 and thrust plate 81 are supported for rotation by fluid (gas or liquid) between the surfaces of the two and the corresponding inner surfaces of the sleeve 82 and the counter-plate 84, wherein these surfaces have patterns of grooves thereon (col. 5, lines 17-24).

Thus, **Kloeppel** teaches shaft 80 and thrust plate 81 are "supported for rotation" by fluid between surfaces of the shaft and thrust plate. *See id.* The hydrodynamic grooves function only to "establish appropriate pressures in the fluid and support the shaft for rotation". As shown in Fig. 3, the direction in which the shaft would be "supported for rotation" would be the same direction in which the thrust plate 81 would be moved *away from* grooved surface 89. Therefore, **Kloeppel** fails to disclose the claimed groove or grooves in the radial bearing portion that generate a force in a thrust direction (i.e., a direction which forces the members of the thrust bearing portion closer to one another). *See id.*

Kloeppel accordingly does not identically teach, explicitly or implicitly, the claimed invention and fails to substantiate the Examiner's alleged anticipatory rejection under 35 U.S.C. § 102(b) over claims 1-3, 5 and 6. Withdrawal of this rejection is requested.

THE 35 U.S.C. § 103 REJECTION

Claim 4 is again being rejected under 35 U.S.C. § 103 as being unpatentable over **Kloeppel** in view of **Ichiyama** ('454). This rejection is again traversed as being legally improper and factually unsupported.

The Examiner alleges that "there is a strong motivation to make an obvious modification to combine **Kloeppel** '703 hydrodynamic bearing with herring-bone-shape grooves and having portion of the bearing connected to the outside atmosphere (Fig. 1) as taught by **Ichiyama** 6,034,454 to generate a pressure witch [*sic: which*] lifts up efficiently the sleeve and thrust plate from the top portion of the shaft.

1. EACH AND EVERY ELEMENT IS NOT TAUGHT OR SUGGESTED

To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981 (CCPA 1974); *In re Wilson*, 424 F.2d 1382, 1385 (CCPA 1970); *In re Ochiai*, 71 F.3d 1565, 1572 (Fed. Cir. 1995). As discussed both *infra* and *supra*, the factual predicate necessary to establish and support an obviousness rejection under 35 U.S.C. § 103(a) has not been established.

For the reasons stated above, detail of which is omitted herein for brevity, **Kloeppel** teaches shaft 80 and thrust plate 81 are supported for rotation by fluid between surfaces of the shaft and thrust plate and the hydrodynamic grooves only "establish appropriate pressures in the fluid and support the shaft for rotation" (col. 5, lines 17-23). As shown in Fig. 3 of **Kloeppel**, the direction in which the shaft would be "supported for rotation" would be the same direction in which the thrust plate 81 would be moved *away from* grooved surface 89, contrary to independent claim 1 and dependent claim 4.

Ichiyama is unable to make up for this deficiency in the teachings of **Kloeppel**.

Ichiyama discloses a hydrodynamic bearing having herringbone grooves 13 in the upper side of

the radial bearing portion, as well as spiral grooves 14 in a lower side (Fig. 2a). The spiral grooves 14 are formed for the purpose of drawing the fluid downwardly during rotation of the shaft 2 to increase hydrodynamic pressure in the thrust bearing portion 19 together with the pressure generated by the spiral grooves 15 formed in the thrust bearing portion 19. This increased hydrodynamic pressure is balanced with an urging force due to a magnetic bias shown by an arrow A in Fig. 1 (col. 8, lines 19-24). Because of this magnetic urging force, a thrust bearing portion for supporting a shaft 2 upwardly during rotation is not provided in the bearing of **Ichiyama** (col. 8, lines 53-58; Figs. 1-4).

When the spiral grooves 14, as shown in Fig. 2a of the **Ichiyama**, are provided on inner surface of the sleeve 4, the shaft 2 to be inserted in the sleeve 4 (see Fig. 1) should be rotated counter-clockwise when viewed from an upper side of the drawing. Fluid 6 existing in the radial bearing portion is drawn downwardly toward the thrust bearing portion 19 by this counter-clockwise rotation. This fluid may be used for increasing hydrodynamic pressure in the thrust bearing portion. During rotation, the shaft 2 is also urged downwardly because of a screw effect of the spiral grooves 14. However, even though the shaft 2 is urged downwardly, the gap between the members forming the thrust bearing portion is not reduced, in contrast to that of the present invention, because the spiral grooves are not formed at an underside of the thrust plate 3 (col. 8, line 53-58) in this hydrodynamic bearing. Since the grooves 15 are formed on the upper side of the thrust plate 3 of **Ichiyama**, the downward movement of the shaft 2 increases the gap in the thrust bearing portion of this bearing, which is in a completely opposite direction to that of the claimed invention.

Fig. 5 of **Ichiyama** shows a hydrodynamic bearing having grooves 60 in the radial bearing portion as well as grooves 60 on both side of the thrust plate 56. In this example, however, the grooves 60 formed in the radial bearing portion are herring-bone grooves (column

2, line 13), which are used for generating radial hydrodynamic pressure only, and are not designed to generate an urging force for narrowing the gap in the thrust bearing portion.

Whereas **Ichiyama** guides fluid in the radial bearing portion toward the thrust bearing portion by means of the spiral grooves 14, the present invention intends to enhance thrust rigidity by reducing the gap in the thrust bearing portion by means of screw effect created by the spiral grooves formed in the radial bearing portion. Fig. 4 of Applicants' disclosure shows a hydrodynamic bearing in which the shaft rotates. The shaft 2 is provided with spiral grooves 7 inclined in a left handed direction. When the shaft 2 rotates in the counterclockwise direction, the shaft 2 is urged downwardly in the drawing by the screw effect of the spiral grooves 7, which in turn reduces the gap in the thrust bearing portion, whereby enhanced thrust rigidity is achieved. In this particular condition, fluid located in the radial bearing portion is drawn upwardly (away from the thrust bearing portion) by the effect of the spiral grooves 7, which is in a completely opposite direction to that intended by **Ichiyama** (in which the fluid needs to be guided toward thrust bearing portion downwardly located). Thus, the present invention differs from **Ichiyama** in terms of structure, operation and working effect.

In the instant case, the combination of **Kloeppel** and **Ichiyama** has not been shown to teach or suggest the claimed combination of elements including, *inter alia*, a hydrodynamic bearing wherein "either one of the surfaces forming said radial bearing portion is provided with a groove or grooves (7) which generate a force in a thrust direction so as to make the two facing members at said thrust bearing portion closer to each other" and "either one of the surfaces of said two facing members at said thrust bearing portion is provided with a groove or grooves (6) which generate a hydrodynamic pressure in said thrust direction".

It is not the prior art of record, but rather the Applicants' own specification that teaches the use of a hydrodynamic bearing wherein "either one of the surfaces forming said radial bearing

portion is provided with a groove or grooves (7) which generate a force in a thrust direction so as to make the two facing members at said thrust bearing portion closer to each other" and "either one of the surfaces of said two facing members at said thrust bearing portion is provided with a groove or grooves (6) which generate a hydrodynamic pressure in said thrust direction".

As emphasized throughout the Manual of Patent Examining Procedure, the prior art references applied must teach or suggest all the claim limitations. MPEP §§706.02(j); 2142; 2143; 2143.03. If the references fail to do so, a *prima facie* case of obviousness is not established. Clearly, therefore, under the correct standard of obviousness, as reflected in the above MPEP provisions, the Examiner has failed to establish *prima facie* obviousness of the claimed invention. Even under the Examiner's view of the prior art, neither **Kloeppe** nor **Ichiyama**, alone or in combination, in fact teaches or suggests the claim limitations emphasized above. Reconsideration and withdrawal of this 35 U.S.C. § 103(a) rejection is requested.

2. EXAMINER'S BURDEN OF PROOF HAS NOT BEEN DISCHARGED

The ultimate determination on patentability is made on the entire record. *In re Oetiker*, 977 F.2d 1443, 1446 (Fed. Cir. 1992). As part of this determination, Examiners are to consider all rebuttal arguments and evidence presented by Applicants. *See, e.g., In re Soni*, 54 F.3d 746, 750 (Fed. Cir. 1995); *In re Alton*, 76 F.3d 1168 (Fed. Cir. 1996). "A determination under 35 U.S.C. § 103 should rest on all evidence and should not be influenced by any earlier conclusion." *See, e.g., In re Piasecki*, 745 F.2d 1468, 1474 (Fed. Cir. 1984).

"When an applicant submits evidence traversing a rejection, the examiner must reconsider the patentability of the claimed invention. The ultimate determination of patentability must be based on consideration of the entire record, by a preponderance of the evidence, with due consideration to the persuasiveness of any arguments and any secondary evidence". *See, e.g., MPEP § 716.01(d)*(emphasis added). "Facts established by rebuttal evidence must be

evaluated along with the facts on which the conclusion of a *prima facie* case was reached, not against the conclusion itself." *In re Eli Lilly*, 902 F.2d 943 (Fed. Cir. 1990)(emphasis added).

In the Request for Reconsideration filed September 13, 2002, Applicants presented extensive technical remarks distinguishing the structure and operation of the invention from that of the applied prior art, taken singly and in combination.

The Examiner's "Response to Arguments" presented in the Final Office Action (Paper No. 14, Page 4) asserted that the technical remarks regarding the claimed invention were not persuasive "since the rejections of the claimed inventions are based on claim limitations". Despite Applicants' earnest efforts to highlight the differences between the claimed invention and the applied references, the Examiner was somehow left with the impression that the claim limitations were not argued and that the Applicants were arguing features not claimed. This is clearly not the case. For example, the Request for Reconsideration discusses, on the paragraph bridging pages 2 and 3 and the first full paragraph on page 3, the failure of **Kloeppe** to teach or suggest *claimed subject matter*. The Request for Reconsideration also discusses, on the first full paragraph on page 6, the failure of **Ichiyama** to teach or suggest *claimed subject matter*.

"Wherever the evidence is insufficient to overcome the rejection, the examiner must specifically explain why the evidence is insufficient. General statements such as . . . 'the scope of the evidence is not commensurate with the scope of the claims' without an explanation supporting such findings are insufficient". MPEP § 716.01 (emphasis added).

In view of the above, it is submitted that the Examiner failed to establish a *prima facie* case of obviousness under 35 U.S.C. § 103(a), as the Examiner has not considered the record in its entirety in arriving at the conclusion of obviousness or has not provided evidence of such consideration. The Examiner's rebuttal, comprising a reassertion of alleged obviousness under 35 U.S.C. § 103, is lacking in premise or basis in the record as a whole, as it improperly

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dismisses the substance of the Applicants' rebuttal evidence, draws conclusions not permitted by the facts of record, and fails to provide explanation of such conclusions.

Withdrawal of this 35 U.S.C. § 103 rejection is requested for at least this reason.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

MCDERMOTT, WILL & EMERY



William D. Pegg
Registration No. 42,988

600 13th Street, N.W.
Washington, DC 20005-3096
(202) 756-8000 WDP/SAB:kap
Facsimile: (202) 756-8087
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